

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch
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Contract #: 04-0120F4Cty: SF/Ala Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-005753**Date Inspected:** 05-Mar-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 1845**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 645**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Tu Jun, Yun Xiao**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Tower and OBG Components**Summary of Items Observed:**

On this date Caltrans OSM Quality Assurance (QA) Inspector George Goulet was present during the times noted above for observations relative to the work being performed.

Bay 14

On this date Caltrans OSM Quality Assurance (QA) Inspector George Goulet was present during the times noted above for observations relative to the work being performed.

Bay 10

This QA Inspector randomly observed the following work in progress in Bay 10:

SAW welding of weld joints NSD1-FCSA3-1B/C-26B(2), 28, 29B(1) located on PCMK north tower, lift 3, skin C.

Welder was identified as 250522. ZPMC QC was identified as Tu Jun (QC1). The welding variables recorded by QC1 appeared to comply with WPS-B-T-2221-B-U3c-S-2 for the CJP welds and WPS-B-T-2321-B-P3-S-2 for the PJP weld. Also present at this location and appearing to be monitoring the welding was ABF Representative Li Nan.

Bay 11

This QA Inspector randomly observed the following work in progress in Bay 11:

FCAW welding of weld joints WSD1-SA298-B/G-3 and C/G-5 located on PCMK west tower, lift 2, skin E. The two welders at B/G-3 were identified as 066865 and 068493. The two welders at C/G-5 were identified as 066279 and 068882. ZPMC QC was identified as Yun Xiao (QC2). The welding variables recorded by QC2 appeared to comply with WPS-B-T-4332-Tc-P4-F. Also present at this location and appearing to be monitoring the welding

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was ABF Representative Liu Cheng.

Bay 14

This QA inspector proceeded to Bay 14 in response to a ZPMC NDT Inspection Notification to perform MT inspection as follows:

This QA Inspector performed MT of approximately 15% of the area previously tested and accepted by ZPMC Quality Control personnel. This QA inspector generated an MT report for this date. The member is identified as DP575-001. The weld designations reviewed are as follows: 011, 015, 017, 251, 253, 254. QA Inspector also notated QA MT review on the member.

Bay 5

This QA inspector proceeded to Bay 5 in response to a ZPMC NDT Inspection Notification to perform final MT inspection on members BK001-008~014, each with weld numbers 012~023, 063~066, 040~045, 047~060, 026~037. Prior to performing MT inspection, this QA Inspector began performing VT inspection of 100% of the area previously tested and accepted by ZPMC Quality Control personnel. This inspector reviewed all above noted welds. This inspector observed rough weld metal to base metal transition contributing to improper weld profile, arc strikes on weld metal and base metal, and incomplete fusion of weld metal to base metal on each of the seven members reviewed.

Unless otherwise noted, all work observed on this date appeared to generally comply with applicable contract documents.

This QA inspector proceeded to Bay 14 in response to a ZPMC notification of witness inspection to perform MT inspection as follows:

This QA Inspector performed MT of approximately 15% of the area previously tested and accepted by ZPMC Quality Control personnel. This QA inspector generated an MT report for this date. The member is identified as DP595-001. The weld designations reviewed are as follows: 001~010. QA Inspector also notated MT review on the yellow tag attached to the member.

Bay 9 - PMT

This QA inspector monitored OBG Production Monitoring Test (PMT) #1 for deck panels DP155-001 and DP101-001 at Gantry #1. Prior to PMT #1, the magnetic particle test (MT) of the tack welds was noted on the test panel as having been performed by ZPMC MT Inspector Wang Wei. The visual inspection of tack welds and root gap was performed by ABF Representative Lv Yun (ABF), ZPMC CWI Guo Yan Fei (QC), and this QA inspector. The start time for welding of PMT #1 was approximately 0025 hours on Thursday, 3/4/09 and the finish time was approximately 0048 hours. This QA inspector randomly verified and documented the welding amperage, voltage and travel speed during the gas metal arc welding (GMAW) and submerged arc welding (SAW) processes, welds 1 thru 6 at the completion of both the GMAW root pass and SAW cover pass. The welds were visually inspected by ABF, QC and this QA inspector. QC and ABF informed QA Inspector that all six welds were acceptable and QA inspector concurred. This QA inspector randomly witnessed ZPMC Ultrasonic Testing (UT) inspector, identified as Ting Xing Shan, perform UT on each of the 500 mm test welds for depth of penetration and conformance. This QA inspector selected fifteen designated locations for macroetch sampling per contract requirements. Each macroetch location was stamped by ZPMC personnel with the number 155, as well as the

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letter K, and an individual macroetch identifying number for each macroetch. After removal from each of the weld test specimens and polishing of the selected end, the macroetches were evaluated with a 7X optical comparator and a 10X optical comparator and accepted by QC, ABF, and this QA Inspector.

All fifteen sample macros appeared to meet requirements and were noted to appear acceptable. See Caltrans U-ribs PMT Inspection Sheet, ZPMC production monitoring test plate inspection report, and Caltrans Macro Etch Log - all dated 3/5/2008 for additional information.

Unless otherwise noted, all work observed on this date appeared to generally comply with applicable contract documents.

Summary of Conversations:

This QA inspector asked each QC noted above if all the welding variables observed by them appeared to comply with the appropriate WPS, including preheat and interpass temperature requirements according to thickness of the thickest member being welded. Each QC showed this QA Inspector that he was carrying the appropriate temperature sticks to monitor minimum and maximum preheat and interpass temperatures and replied that all he observed did appear to comply.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang, 134-8257-0045, who represents the Office of Structural Materials for your project.

Inspected By:	Goulet, George	Quality Assurance Inspector
Reviewed By:	Carreon, Albert	QA Reviewer
